NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER

JUSTIFICATION FOR OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO 10 U.S.C. 2304(c)(1) and FEDERAL ACQUISITION REGULATION 6.302-1

1. **This document is a justification for other than full and open competition prepared by the NASA Lyndon B. Johnson Space Center (JSC).**

2. **The nature and/or description of the action being approved**:

   This justification provides the rationale for contracting by other than full and open competition for Cylindrical Rapid Cycle Amine Valve Development services.

3. **Description of the supplies or services required, include an estimated value:**

   NASA and support contractor engineers have developed a concept for a rotating face seal valve to control flow in a cylindrical Rapid Cycle Amine (RCA) canister for use in a Portable Life Support System (PLSS). NASA needs an experienced spaceflight hardware provider to optimize the design and manufacture two test articles.

   The estimated value for this acquisition is approximately $213,255.

4. **Statutory authority permitting other than full and open competition:**

   The statutory authority permitting other than full and open competition for this action falls within Federal Acquisition Regulation (FAR) 6.302-1 (a)(2)(iii)(B), "Only One Responsible Source and No Other Supplies or Services Will Satisfy Agency Requirements," pursuant to 10 U.S.C. 2304(d)(1)(B), services may be deemed to be available from only one source for the continued provision of highly-specialized services when it is likely that award to any other source would result in unacceptable delays in fulfilling the Agency's requirements.

5. **A demonstration that the proposed contractor's unique qualifications or the nature of the acquisition requires use of the authority cited:**

   Hamilton Sundstrand is specially qualified to perform this work through their experience developed from internal research and development work, and other competitively awarded contracts. The development of each of these valves requires considerable experience in oxygen safety, materials compatibility, and the many requirements to integrate with the Portable Life Support System (PLSS). Under other contracts they have also developed the three other valve concepts for amine swing beds, including mechanically actuated spool valves, pneumatically actuated spool valves, and ganged rotating ball valves through other contracts. They are providing amine swing beds with control valves to the NASA Orion Project as part of the team selected by the prime contractor, Lockheed Martin.

   This work is a follow-on from a task on the CRAVE contract. The original contract optimized the design of the cylindrical RCA canister, and built two test articles. Those test articles are being evaluated for pressure drop, and for the CO_2 and H_2O removal efficiency of the unit. The top surface of that canister and the ports to the flow paths through it form half of the valve to be developed in this effort. This effort

is to optimize the face seal that rotates on the top of the canister, and manufacture two test articles that can test valve performance issues like motor power and leakage. No other source currently has the capabilities to achieve the requirements of this contract. Procuring to any other source would require significant duplication of costs and time to educate new contractors on the system architecture, rapid cycle amine technology and operation, and interface requirements.

6. **Description of the efforts made to ensure that offers are solicited from as many potential sources as practicable:**

   A synopsis was issued on the NASA Acquisition Internet Service on May 06, 2010, to allow industry the opportunity to provide capabilities. The synopsis closed on May 21, 2010 and no companies provided capabilities.

7. **Description of the market survey conducted, and the results, or a statement of the reasons a market survey was not conducted**:

   The Contracting Officer's Technical Representative (COTR) and NASA's EVA project has gone through an organized process to select baseline and backup technologies for their development efforts for a lunar space suit in which many options were already investigated. The EVA project awarded contracts to two separate teams (Oceaneering Space Systems and Texas Engineering Experiment Station at Texas A&M) to independently analyze a range of functional schematics for the PLSS as the CRAVE contract Delivery Order #1. These included 500 separate functional ideas and 36 independent complete PLSS schematics. After evaluating a long list of key parameters like mass, life cycle cost, reliability, etc, they were narrowed to 21 and then to 14. Many PLSS stakeholders, including engineers from operations and technology development, and astronauts reviewed the results through a formal decision making process. The final schematic selected for development featured the Hamilton Sundstrand Rapid Cycle Amine (RCA) as the technology for carbon dioxide and humidity control.
   Through this market research for PLSS solutions, no other companies have been identified that can meet the requirements for the PLSS as well as the RCA.

8. **Other facts supporting the use of other than full and open competition:**

   Any course of action other than awarding to Hamilton Sundstrand., would not fulfill the Agency's requirements, and therefore, is not in the best interest to the Government.

9. **Sources, if any, that expressed an interest in writing the acquisition**:
   No sources expressed an interest in writing.

10. **The actions, if any, the Agency may take to remove or overcome any barriers to competition before any subsequent acquisition for the supplies or services required:**

    This Agency will continue to remove or overcome any barriers to competition before any subsequent acquisition for these services are required. To do so, the procurement offices will coordinate with the COTR to ensure any needs for publicizing formal RFIs and sources sought synopses are met. These postings will enable the COTR and technical community to gather crucial information regarding the options and available sources for the future testing needs of the Agency. The technical offices and COTR will continue to monitor industry capabilities by attending related seminars and industry forums. The COTR will also continue to review relevant technical journals, Government and commercial databases, and Internet resources for relevant information.

Technical Officer: I certify that the supporting data presented in this justification are accurate and complete.

FOR MOLLY ANDERSON

Molly Anderson
Contracting Officer's Technical Representative

7/28/10
Date

Contracting Officer: I hereby determine that the anticipated cost to the Government will be fair and reasonable and certify that this justification is accurate and complete to the best of my knowledge and belief.

P. Lamar Mueller
Contracting Officer

7/30/10
Date